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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Yusaku Shimaoka

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VALLEY FORGE, PA 19482

EXAMINER

BROOKS, JERRY L.

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/587,759	Applicant(s) SHIMAOKA ET AL.	
	Examiner JERRY BROOKS	Art Unit 2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16,18 is/are pending in the application.
- 4a) Of the above claim(s) 5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1-3,6-16 and 18 is/are rejected.
- 7) ☐ Claim(s) 4 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>10/30/2009,05/14/2007,07/28/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of claims 2- 4, 6-11 and 13-18 wherein claims 1 and 12 are generic, in the reply filed on 09/02/2009 is acknowledged.

Claim Objections

Claims 9, 10, and 11 are objected to because of the following informalities: claim 9 depends from claim 5 which has been with drawn.

Claims 10 and 11 depend from claim 9. For the purpose of examination examiner interprets claim 9 to depend from 1. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 6-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noji et al (6,543,900 B2) in view of Nakanishi (2004/006668).

With respect to claim 1, Noji discloses a projection display apparatus comprising: a first light generating instrument which includes a light source that generates white light; a second light generating instrument (2a: see col. 4, 41-49

Art Unit: 2878

which discloses an Led or Laser) which includes a solid state light source which generates light (2a); a light modulation element (15,16,17) which modulates the white light when the white light is received (via the dichroic mirrors) and which modulates the light generated by the second light generating element when the light generated by the second light generating element is received (via the dichroic mirrors:see fig.1, 9 and 8); a light guiding instrument (3 a) which switches between guiding the white light and the light generated by the second light generating element to the light modulation element (see fig.1); and a projection instrument (14) which projects the light modulated by the light modulation element.

Noji does not disclose a plurality of solid state light sources which generate red, green, and blue monochromatic light respectively and using monochromatic light.

Nakanishi discloses a projector and a light generation element comprising a plurality of solid state light sources which generate red (11), green (12), and blue(13) monochromatic light respectively and using monochromatic light (see fig.4).

It would have been obvious to one of ordinary skill in the art at the time of inventions to modify the second light generation element of Noji with the plurality of solid state light sources and monochromatic light of Nakanishi to improve the quality of the image by increase the spectral purity of the light.

With respect to claim 6, Noji in view of Nakanishi discloses the projection display apparatus according to claim 1, further comprising: a control instrument (19a and 20f-d and micro-computer: 108) which controls at least operation of the light guiding instrument, and wherein: the control instrument controls the light guiding instrument to guide the monochromatic light (as discussed in claim 1 above) to the light modulation element and further controls the light guiding instrument after a predetermined time to guided the white light to the light modulation element (see col.8, lines 45-65).

With respect to claim 7, Noji in view of Nakanishi discloses he projection display apparatus according to claim 6, wherein the control instrument controls (19a and 20f-d and micro-computer: 108) the first light generating instrument and the second light generating instrument (see wherein the first (1a) and second generation (2a as discussed in claim 1) instruments are controlled by 108) so that the second light generating instrument generates the monochromatic light (as discussed in claim 1 above) while the light guiding instrument is guiding the monochromatic light (as discussed in claim 1 above) to the light modulation element, and the first light generating instrument generates the white light while the light guiding instrument is guiding the white light to the light modulation element (see col.8, lines 45-65 and see fig.1, 3a and 3b).

With respect to claim 8, Noji in view of Nakanishi discloses the projection display apparatus according to claim 7, wherein:

Art Unit: 2878

the control instrument (19a and 20f-d and micro-computer: 108) includes a light volume measuring instrument (step s6 implicitly discloses a light volume measuring instrument) which at least measures a light volume of the first light generating instrument (1a), and controls the light guiding instrument to guide the white light to the light modulation element at the time as the predetermined time, when the light volume measured by the light volume measuring instrument becomes equal to or more than a predetermined value (see col.8, lines 45-65 and see fig.1, 3a and 3b).

With respect to claim 9, Noji in view of Nakanishi discloses the projection display apparatus according to claim 1, further comprising collector optics (5) for collecting the white light or the monochromatic light (as discussed in claim 1) on the light modulation element (implicitly disclosed by fish eye lens 5), and wherein: the light guiding instrument (mirror 3(b)) selectively guides the white light or the monochromatic light (as discussed in claim 1 above) to the collector optics and thereby guides the white light or the monochromatic light (as discussed in claim 1) selectively to the light modulation element (fig.1).

With respect to claim 10, Noji in view of Nakanishi discloses the projection display apparatus according to claim 9, an optical axis (the optical axis reflected by mirror 3(a)) of the white light generated by the first light generating instrument between the first light generating instrument (1a) and the collector (5) optics is substantially on a straight line (see fig.1); and the optical axis (the

Art Unit: 2878

optical axis of the light of 2a) of the monochromatic light (as discussed in claim 1) generated by the second light generating instrument (2a) between the second light generating instrument (2a: see fig.1) and the collector optics is bent via the light guiding instrument (3(a)).

With respect to claim 11, Noji in view of Nakanishi discloses the projection display apparatus according to claim 9, wherein the optical axis (the optical axis of the light of 2a) of the monochromatic light (as discussed in claim 1) generated by the second light generating instrument (2a) between the second light generating instrument and the collector optics is substantially on a straight line (see fig.1); and the optical axis of the white light generated (see 1a and fig.1) by the first light generating instrument between the first light generating instrument and the collector optics is bent via the light guiding instrument (3a).

With respect to claim 12, Noji in view of Nakanishi discloses the projection display apparatus of claim 7, wherein:

the first light generating instrument is driven by a first power supply based on supply of power from outside (110 via power supply 107);the second generating instrument is driven by a second power supply which is a built in power supply (107); the control instrument monitors a status of the first power supply and the second power supply (microcomputer monitors the power the status of the first and second power supply via the supply 107: implicitly

Art Unit: 2878

disclosed by); the control instrument controls the light guiding instrument to guide the monochromatic light to the light modulation element irrespective of the state of the first power supply and the second power supply (col.9, lines 32-48 and fig.5: when the power supplies 107 and 110 are instantaneously interrupted the mirror move to position 3b), and exerts control, on detecting that at least the first power supply is supplied with the power from outside (implicitly disclosed by lines 35-40), to operate the second light generating instrument and then the first light generating instrument (col.9,lines 49-58).

With respect to claim 13, Noji in view of Nakanishi discloses the projection display apparatus according to claim 1, in which the second light generating instrument is a light-emitting diode or a laser diode (2a: see col. 4, 41-49 which discloses an LED or Laser).

With respect to claim 14, Noji discloses the projection display apparatus according to claim 1, in which the first light generating instrument is a lamp which emits light by arc discharge (1a).

With respect to claim 15, Noji in view of Nakanishi discloses the projection display apparatus according to claim 1, in which the light guiding instrument includes a mirror (3a) surface located between the optical axis of the white light and the optical axis of the monochromatic light (as discussed above in claim 1) by rotation or parallel movement (see fig.1 wherein the mirror moves between the optical axis of light sources 1a and 2a).

With respect to claim 16, Noji discloses an image display method using: a first light generating instrument (1a) which generates white light; a second light generating instrument (2a) which includes a solid state light source (2a: see col. 4, 41-49 which discloses an Led or Laser) which includes a solid state light source which generates light (2a); a light modulation element which modulates the white light when the white light is received (via the dichroic mirrors: see fig.1, 9 and 8) and which modulates the light generated by the second light generating element when the light generated by the second light generating element is received (via the dichroic mirrors: see fig.1, 9 and 8); and a projection instrument (14) which projects the light modulated by the light modulation element (15,16,17) , and wherein: the method includes a light guiding step of switching between guiding the white light and the light generated by the second light generating element to the light modulation element (see fig.1 wherein the mirror moves between the optical axis of light sources 1a and 2a) ; and the light guiding step guides the light generated by the second light generating element to the light modulation element and then guides the white light to the light modulation element (see fig.1 wherein the mirror moves between the optical axis of light sources 1a and 2a).

Noji does not disclose a plurality of solid state light sources which generate red, green, and blue monochromatic light respectively and thereby using monochromatic light.

Art Unit: 2878

Nakanishi discloses the method step of displaying an image and a light generation element comprising a plurality of solid state light sources and thereby generates more than or equal to three kinds of monochromatic light (red (11), green (12), and blue(13)) and uses (see fig.4).

It would have been obvious to one of ordinary skill in the art at the time of inventions to modify the second light generation method of Noji with the method step of Nakanishi which uses a light generating element that includes a plurality of solid state light sources and thereby generates more than one or equal to three kinds of monochromatic light and uses monochromatic light of Nakanishi to improve the quality of the image by increase the spectral purity of the light.

With respect to claim 18, Noji in view of Nakanishi of discloses a recording medium which is recorded a program and processable by the computer, wherein the program is for causing a computer to function as a control instrument which controls at least operation of the light guiding instrument of the projection display apparatus according to claim 6 (implicitly disclosed by the microprocessor which controls operation of the projector see fig.4 and 5).

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noji et al (6,543,900 B2) in view of Nakanishi (2004/006668) and further in view of Bierhuizen (US 7,055,967).

With respect to claim 2, Noji in view of Nakanishi discloses projection display apparatus according to claim 1, does not discloses comprising a color

Art Unit: 2878

wheel including first, second and third regions corresponding to red, green, and blue colors respectively, the first, second and third regions circularly arranged in chronological order by rotation.

Bierhuizen discloses comprising a color wheel including first, second and third regions corresponding to red, green, and blue colors respectively, the first, second and third regions circularly arranged in chronological order by rotation

(See the color wheel in fig.1, 103 which contains the colors R, G, B, thereby implicitly discloses circularly arranged in chronological order by rotation).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the device of Noji in view of Nakanishi with the color wheel of Bierhuizen to improve image quality by increasing spectral purity.

With respect to claim 3, Noji in view of Nakanishi discloses projection display apparatus according to claim 2, Noji does not disclose in which the second light generation element lights up the solid light sources selectively so that there is a match between a color corresponding to one of the regions of the color wheel located in a light path and the color of the monochromatic light..

Nakanishi discloses a plurality of solid state light sources which generate red (11), green (12), and blue (13) monochromatic light respectively and using monochromatic light (see fig.4) in which a light g element lights up the solid light sources selectively.

Art Unit: 2878

It would have been obvious to one of ordinary skill in the art at the time of inventions to modify the second light generation element of Noji with the plurality of solid state light sources and monochromatic light of Nakanishi to improve the quality of the image by increase the spectral purity of the light.

Noji in view of Nakanishi discloses do not disclose so that there is a match between a color corresponding to one of the regions of the color wheel located in a light path and the color of the monochromatic light.

Bierhuizen discloses comprising a color wheel including first, second and third regions corresponding to red, green, and blue colors respectively, the first, second and third regions circularly arranged in chronological order by rotation and located on a an optical axis (See the color wheel in fig.1, 103 which contains the colors R, G, B, thereby implicitly discloses circularly arranged in chronological order by rotation).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the device of Noji in view of Nakanishi with the color wheel of Bierhuizen so that there is a match between a color corresponding to one of the regions of the color wheel located in a light path and the color of the monochromatic light to improve image quality by increasing spectral purity.

Allowable Subject Matter

Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 2878

With respect to claim 4, the prior art of record, taken alone or in combination, fail to disclose or render obvious the projection display apparatus comprising a color wheel including first, second and third regions corresponding to red, green, and blue colors respectively, the first, second, and third regions in which the color wheel further includes a region corresponding to white, and stops in a state of having the region corresponding to white located in a light path while the monochromatic light is selected by the light guiding instrument, which is structurally arranged and functionally operated as claimed in claim 4.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JERRY BROOKS whose telephone number is (571)270-5711. The examiner can normally be reached on Monday-Friday, 9 a.m.- 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2878

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JERRY BROOKS/
Examiner, Art Unit 2878

/Georgia Y Epps/
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